DOCUMENT RESUME

ED 353 012 JC 930 041

TITLE	Economic Impact Study, 1992.
INSTITUTION	Oakland Community Coll., Farmington, MI. Office of Institutional Planning and Analysis.
PUB DATE	Nov 92
NOTE	25p.
PUB TYPE	Reports - Research/Technical (143) -- Statistical Data (110)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Community Colleges; Cost Effectiveness; *Economic Development; *Economic Impact; Economic Research; *Educational Economics; *Expenditures; Models; *School Community Relationship; Two Year Colleges
IDENTIFIERS	*Oakland Community College MI

ABSTRACT

In an effort to determine the economic benefits that Oakland Community College (OCC) in Michigan had on the local economy of Oakland County and on the state during fiscal year 1991-92, an economic impact study was conducted. The study utilized an economic impact model consisting of three major components: direct institutional expenditures; direct expenditures of college employees; and direct expenditures of students. In addition to the direct economic impact of these three expenditures, the model also utilized a mathematical "multiplier" to estimate additional business volume generated by the expenditures. The study sought to measure subsequent expenditures resulting from re-spending within the geographic area and the state of money from the initial direct expenditures. Study findings included the following: (1) for 1991-92, direct expenditures in Oakland County amounted to $17,528,806 by the institution, $12,756,565 by employees, and $114,684,730 by students, for a total of $145 million; (2) total direct impact on the state economy was estimated at $156 million; (3) using the multiplier, the indirect economic impact was estimated at $290 million within Oakland County, and $350 million statewide; (4) in addition to the 959 full-time equivalent (FTE) employees of OCC living in the county, economic activity of the college generated 5,816 more FTE jobs countywide, and 7,525 FTE jobs statewide; (5) for every dollar of local property tax support to OCC, an additional $12.45 was generated within the local economy by OCC; and (6) for every dollar of state aid to OCC, $19.55 was returned by OCC to the Michigan economy. Detailed data tables, an explanation of the multiplier and other data tools, and references are included. (PAA)

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ECONOMIC IMPACT STUDY
1992

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ECONOMIC IMPACT STUDY
1992

Prepared by:
The Office of Institutional Planning & Analysis, November 1992.

Oakland Community College
Office of Institutional Planning and Analysis
Farmington, Michigan

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OAKLAND COMMUNITY COLLEGE
1992 ECONOMIC IMPACT STUDY

EXECUTIVE SUMMARY

- The purpose of this study was to estimate the economic benefits that Oakland Community College has on the local economy of Oakland County and on the state of Michigan. It is based upon the economic impact model developed by Caffrey and Isaacs in 1971, and refined by Jamestown Community College, New York.

- The direct tangible economic impact of Oakland Community College on the county and state economy was based on three major components of institutional, student and employee expenditures. In total, these three components result in a direct impact of $145 million dollars on the economy of Oakland County and $156 million dollars on the economy of Michigan.

- In addition to the direct economic impact related to these expenditures, an indirect impact was estimated using a "multiplier" to calculate the increased business volume generated by initial expenditures being recycled within the economy. This recycling effect results in an impact of $290 million within Oakland County, and $350 million in the state.

- Further analysis indicates that Oakland Community College contributed a significant number of jobs to the economy. In addition to the 959 FTE College employees living in the county, increased economic activity provided by the college generated 5,816 more FTE jobs. Within Michigan a total of 7,525 FTE jobs were generated by Oakland Community College and its associated business volume.

- Local property tax provided 32% of the revenue for Oakland Community College in 1991-92. In return for every dollar of this taxpayer support an additional $12.45 was generated within the local economy as a result of institutional, employee and student expenditure.

- State aid in support of Oakland Community College totalled nearly $18 million in 1991-92. In return for every one dollar spent by the state $19.55 was returned to Michigan's economy.

ACKNOWLEDGEMENTS

The Office of Institutional Planning & Analysis would like to acknowledge the support of the following people in providing data and technical assistance in compiling this report: Sue Beattie, Jack Inch, Dan Jaksen, Helen Kieba, Julie Ray, John Valentine, and Brant Wright.

OAKLAND COMMUNITY COLLEGE
1992 ECONOMIC IMPACT STUDY

INTRODUCTION

The purpose of this study is to estimate the tangible economic benefits that Oakland Community College has on the local economy of Oakland County, and generally within the state of Michigan. Deriving this estimation requires the use of an economic impact model that takes into consideration the unique characteristics of the college as well as the community in which we exist. Several economic impact models were considered for use in this study. Each model was a derivative of the Caffrey and Isaacs model developed in 1971 under sponsorship of the American Council on Education (ACE).

The model used in this study (The Economic Impact of Colleges on their Communities and States), was developed by Jamestown Community College (New York). This model is most appropriate for community colleges that exist in urban/suburban settings. Moreover, this model takes into account the impact of part-time students, whose importance was somewhat discounted by Caffrey and Isaacs. The chosen model employs well established methodologies for data collection and employs widely accepted and available data from both internal and public sources. *(See Appendix A on page 11 for an in-depth description of data elements and their sources.)*

METHODOLOGY

The model used for this study includes three major components of the estimated direct impact of Oakland Community College on the county and state economy. These components include:

1. Direct institutional expenditures.
2. Direct expenditures of college employees.
3. Direct expenditures of students.

In addition to the direct economic impact of these expenditures, the model assumes that the indirect economic impact resulting from additional business volume generated by these expenditures can be estimated by the use of a "multiplier." The multiplier employed in this study was based on U. S. Department of Commerce calculations of the "recycling" effect of expenditures for higher education institutions within the Southeast Michigan geographic region.

The multiplier concept works as follows: for each dollar of initial spending in the Oakland county economy, a proportion is spent again within the area for further goods and services. The remainder is removed from the economy in the form of savings, taxes and spending on goods and services outside the county. A second round of expenditure then occurs with a proportion again being recycled within the county's economy. This process continues with diminishing increments at each stage. (See Figure 1) Therefore, the ratio of total spending to initial, direct expenditure can be estimated to be approximately 2.0 to 1.0. In addition to the total economic impact

generated, the model allows for calculation of the number of full-time equated (FTE) jobs which can be attributed to the economic activity generated by the college.

Figure 1

MULTIPLIER EFFECT

Finally, this study was undertaken within a generally conservative framework. Where alternative choices were available, the most conservative figures were used. For example, full-time student expenditures were based on federal financial aid guidelines for a dependent student living at home, while estimates of part-time student expenditures included only those for books, supplies and transportation to and from classes. In addition, each multiplier was conservative in its estimation of overall economic impact of expenditures and job creation. The model makes no allowance for other significant elements, such as the expansion of local banks' credit bases by college related deposits, increases in sales and property taxes collected by local governments due to college related expenditure, expenditures by visitors to college-related events, nor employee investments in local property. Other less tangible benefits to the local community, such as a skilled work force, technical expertise, cultural and recreational enrichments are impossible to measure.

ANALYSIS

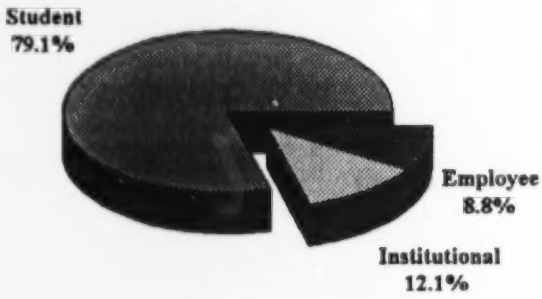
Impact On Oakland County's Economy

Tangible Economic Impact

The direct tangible economic impact of Oakland Community College on the economy of Oakland county was based on total institutional, employee and students expenditures. Student expenditures represent well over three quarters (79.1%) of the college's total direct impact on the county's economy. Institutional expenditures account for 12.1 percent while employee expenditures account for 8.8 percent. In total, these three components of expenditures result in a direct economic impact of $145 million dollars on Oakland county's economy (Table 1).

Figure 2

Direct Tangible Economic Impact of OCC Institutional, Student, and Employee Expenditures on Oakland County



Moreover, the recycling or further spending of the $145 million dollar expenditures results in nearly one third of a billion dollar ($290,087,676) impact on Oakland county's economy when taking into account the "multiplier" effect (Table 1). The "multiplier" effect, was estimated at 2.0 based on U. S. Department of Commerce calculations for higher education institutions in Southeast Michigan.

Table 1
DIRECT TANGIBLE ECONOMIC IMPACT
ON OAKLAND COUNTY'S ECONOMY
(1991-92)

Expenditure Source	1991-92 Amount	Percent of Total
Institutional	$ 17,528,806	12.1
Employee	$ 12,756,565	8.8
Student	$114,684,730	79.1
Total Expenditures	$145,043,838	100.0
Multiplier Effect	$290,087,676	

Full-Time Jobs Related To Oakland Community College

Further analysis indicates that in addition to the business volume generated, Oakland Community College contributes a significant number of jobs to the county's economy. College employees (Full-Time Equivalent) living within the county total 959. As the institution and its employees and students purchase goods and services in the county, this increases economic activity which in effect, creates and supports additional jobs. Caffrey and Isaacs suggested an employment coefficient of 0.00007 to 0.00009, multiplied by the direct expenditure to estimate the number of jobs created by college-related expenditures. The Jamestown model uses a more conservative employment multiplier of 0.0000401 (Table 2) for institutions of higher education, based upon the U.S. Department of Commerce Handbook for Regional Input-Output Analysis. Thus, Oakland Community College and its associated business volume generated 5,816 (FTE) jobs in the county in 1991-92 or almost six additional jobs per employee living in the county. When added to the 959 FTE employees already living in the county, the impact of OCC in terms of employment in Oakland County, is 6,775 Full-Time Equivalent jobs .

Table 2
JOBS RELATED TO OAKLAND COMMUNITY COLLEGE
(1991-92)

Source of Employment	Number of Jobs
OCC FTE Employees in County	959
FTE Employment In County Related To OCC (Multiplier Effect)	5,816
Total FTE Employment In County	6,775

Ratio Of Taxpayer Support To Total Economic Impact

Of total revenue ($72,854,506) received by Oakland Community College in 1991-92 nearly one third (32.0% or $23,305,944) was received from local property tax support. Hence, for every one dollar of local property tax support, an additional $12.45 was generated as the result of institutional, employee and student spending i.e. $290,087,676/$23,305,944=$12.45. In other words, for every one dollar spent by taxpayers in support of Oakland Community College in 1991-92, $12.45 was returned to the county's economy. (See Figure 3) In addition, this figure represents solely the tangible economic return on taxpayer investment, and does not include the educational, service or intangible benefits of the investment.

Figure 3

Return on Taxpayer Investment

Impact On State Economy

Tangible Economic Impact

The economic impact of Oakland Community College on the state's economy was also based on institutional, employee and student expenditures. However, these figures take into account spending that occurs throughout the state and not just within the county. As a result, student spending represents 73.6 percent of total expenditures attributable to the college. Furthermore, institutional expenditures account for 15.8 percent and employee expenditures represent 10.6 percent (Table 3). In total, these three components represent a direct economic impact of $156 million dollars on the economy of Michigan.

As spending was recycled through the state economy, the total economic impact of Oakland Community College in the state was well over a third of a billion dollars in 1991-92 when taking into account the "multiplier" effect (Table 3). This figure is based on a multiplier which was estimated at 2.25 based on U. S. Department of Commerce figures for institutions of higher education in Michigan.

Table 3
DIRECT TANGIBLE ECONOMIC IMPACT
ON MICHIGAN'S ECONOMY
(1991-92)

Expenditure Source	1991-92 Amount	Percent of Total
Institutional	$ 24,681,826	15.8
Employee	$ 16,465,777	10.6
Student	$114,684,730	73.6
Total Expenditures	$155,832,333	100.0
Multiplier Effect	$350,622,749	

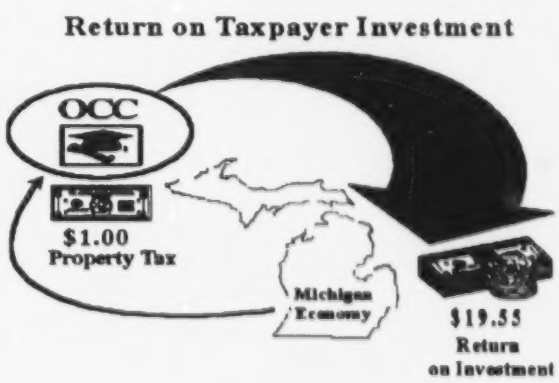
Full-Time Jobs Related To Oakland Community College

Oakland Community College has a total of 1,276 FTE employees living within the state of Michigan. State-wide spending by the college, its employees and students results in the creation and support of an additional 6,249 jobs in the state. Thus, Oakland Community College and its associated business volume generated an estimated 7,525 Full-Time Equated jobs within Michigan during 1991-92.

Ratio Of Taxpayer Support To Total Economic Impact

Oakland Community College received a total of $17,938,787 in State Aid in 1991-92. For every one dollar of State Aid provided to the college, an additional $19.55 was generated by the college as a result of state-wide institutional, employee and student spending i.e. $350,622,749/$17,938,787=$19.55. Thus, for every one dollar spent by the State in support of Oakland Community College in 1991-92, $19.55 was returned to the State's economy.

Figure 4



APPENDIX A

TECHNICAL NOTES

Concept of the Multiplier

This is an important concept which is fundamental to the model. The multiplier is used to demonstrate the repercussions of direct institutional, student and employee expenditures, as described earlier. The Michigan Department of Commerce has estimated that for every $100 brought into Michigan there will be an additional $125 of new revenue generated through the spending of individuals who received the initial money. Thus, the state multiplier is 2.25.

However, since the size of the multiplier is directly related to the size of the geographic unit, the diversity of its industrial and commercial activities and the size of its population, Oakland county could be expected to generate a lower number than that used for the state as a whole. In consultation with recognized experts in the field a conservative multiplier of 2.0 was adopted as the county multiplier for this study. This multiplier is believed to reflect the size, economic vitality and growth of Oakland county within the state.

According to evidence presented by Donald R. Grimes and George A. Fulton of the Institute of Labor and Industrial Relations, University of Michigan, " Oakland has earned its membership in the club of large suburban economies nationwide which are out performing the rest of the country by a wide margin." The county experienced the highest employment growth over the decade of the eighties among all major economic areas in Michigan and also has the highest level of per-capita income within the state.

The employment multiplier is used as a measure of the change in local employment associated with the direct expenditure locally. According to Caffrey and Isaacs the range usually adopted in relation to college economic impact studies is .00007-.00009. This study has used the more conservative figure of 0.00004, adopted by the Jamestown economic impact model.

Data Elements

Following is a description of the data which formed the basis of this study:

1. College Expenditures: Includes total college expenditure for the fiscal year 1991-92, excluding the following: (a) all salaries paid to employees, (b) all internal transfers that are not then expended externally, (c) all taxes and (d) student activity expenditures. *Source: Total expenses from OACO27 less Payroll Funds 01, 02-04, 05-12, 13-20, 21-37, 38, 42-91.*

2. Total Student Activity Expenditures: Includes athletic expenditures and programs generated by fees, admissions and fund-raising activities of clubs and organizations during 1991-92. *Source: OCC, Student expenditures downloaded from CUFS.*

3. Percentage of College Expenditures: Includes expenditure in a) Oakland County b) Michigan c) Out-of-state. *Source: OCC, 1991-92 General Fund Budget (Actuals) paid to Oakland County based vendors, determined by zip codes, as a percentage of actual total expenditures.*

4. Number of College Employees: Includes information concerning Full-time, Part-time employees and the Full-Time Equivalent for these categories. Full-time hours were considered to be 2,080 per head except for full-time faculty. 680.4 was used as the FTE for faculty and part-time faculty. *Source: Payroll data base 1991-92.*

5. Residence of College Employees: Data was obtained for the number of employees, full and part-time living in Oakland County and the number of employees, full and part-time who live in the state of Michigan. *Source: 1991-92 Payroll data base and address data base.*

6. Total Disposable Income Available to Employees: This data provides the amount of disposable income available to all college employees. It excludes all taxes, (city, state, federal, Social Security) and all mandatory retirement deductions but includes annuities and credit deductions. *Source: 1991-92 Payroll data base.*

7. Number of Students: This data details numbers of full-time and part-time students. Full-time students were defined as those enrolled in 12 or more credit hours, part-time as those enrolled in less than 12 credit hours. *Source: Fall 1992 1/10th day report.*

8. Average Annual College-Related Expenditures by Full-Time Students: This figure was determined on the basis of nine-month living allowances and book costs for a single, dependent, full-time student living at home. It specifically excludes costs of tuition and fees. Tuition fees were estimated on the basis of an average 31 credits per year at the cost of $41 per hour, with the addition of an average figure of $137 for registration, course and lab fees. *Source: Financial Aid Schedule interpreted by OCC's Financial Assistance and Scholarships office.*

9. Average Annual College-Related Expenditures by Full-Time Students: This figure was determined on the basis of nine-month living allowances and book costs for a single, dependent, part-time student living at home. It specifically excludes costs of tuition and fees. Tuition fees were estimated at half the full-time rate. *Source: Financial Aid Schedule interpreted by OCC's Financial Assistance and Scholarships office.*

10. Revenue Sources:

    a) Revenue from Students: This includes total tuition and fees from students. *Source: Student tuition and fees from CUFS REVA Table.*

    b) Revenue from Local Government: This includes local property taxes directed to OCC. *Source: Local Government revenue from CUFS REVA Table.*

c) Revenue from State Appropriation: *Source: State Appropriation from CUFS.* REVA Table.

d) Revenue from Other Sources IN STATE: This includes revenue from other sources such as state grants, gifts and donations. *Source: CUFS REVA Table.*

e) Revenue from Other Sources OUT-OF-STATE: This includes revenue from other sources such as Federal grants, Perkins funds, out-of-state gifts and donations. *Source: CUFS REVA Table.*

Detail Work Sheet

Part D: Estimate of percent of Employee Expenditures in Oakland County: This percentage was estimated from data provided in Sales and Marketing Management, Vol. 143, #10.

Part E: Total Numbers and Estimated Annual Expenditures of Out-of-County employees: This data consists of the numbers of full and part-time employees living outside Oakland county and outside Michigan. The third set of data in this section relates to the estimated expenditures of these employees within Oakland County. Following the model used in New York State, a very conservative figure of $1,000 per year for full-time employees was used. Part-time employees were pro-rated at $500 per year. *Source: 1991-92 Payroll data base and address data base.*

Part F: Census Data: This section provides information on the percentage of the population, within Oakland County, who rent housing. The mean monthly rent in Oakland County has been rounded to the nearest dollar. *Source: Oakland County Community and Economic Development Office, Selected Population and Housing Characteristics, Oakland County Michigan, 1990 Census.*

APPENDIX B

OAKLAND COMMUNITY COLLEGE'S
ECONOMIC IMPACT ON OAKLAND COUNTY AND THE STATE

Primary Input Data Spreadsheet

1. College Expenditures:	$38,106,099
2. Total Student Activity Expenditures:	$160,298
3. Percentage of College Expenditures --	
a. in sponsor area:	46%
b. in State:	65%
c. out-of-state:	35%
4. Number of College Employees --	
a. full-time:	812
b. part-time:	1,258
c. TOTAL NUMBER:	2,070
d. FTE for above:	1,280
5. College Employees Who Live -- in sponsoring county (ies) --	
a. full-time:	620
b. part-time:	912
c. TOTAL:	1,532
d. FTE for above:	959
in State--	
a. full-time:	809
b. part-time:	1,256
c. TOTAL:	2,065
d. FTE for above:	1,276
6. Total Disposable Income Available to Employees:	$29,509,472
7. Number of Students --	
a. full-time:	6,088
b. part-time:	23,275
c. TOTAL:	29,363
8. Average Annual College-related Expenditures by Full-time Students:	$4,960

9.	Average Annual College-related Expenditures by Part-time Students:	$3,630
10.	Revenue From Students:	$24,683,689
	Revenue From Local Governments:	$23,305,944
	State Aid:	$17,938,787
	Revenue From Other Sources Within State:	$2,515,058
	Revenue From Out-of-state Sources:	$4,411,028

Data Resource Worksheet

For Part D:	Estimated % of Employee Expenditures IN COUNTY (estimated from Sales and Marketing Management Vol. 139 #6):	51.50%
For Part E:	Total Number of out-of-County--	
	Full-time employees:	192
	Part-time employees:	346
	Total Number of out-of-State--	
	Full-time employees:	3
	Part-time employees:	2
	Annual Expenditures in Service Area by employees residing out of Service Area--	
	Full-time employees expenditures:	$1,000
	Part-time employees expenditures:	$500
For Part F:	Census Data --	
	Percentage Who Rent in County:	27.30%
	Mean Monthly Rent in County:	$495
For Part L:	Multiplier Effect:	2.00
	State Multiplier Effect (Part J):	2.25
For Part P:	Multiplier for Jobs related to College: (Regional Multipliers: A User Handbook, US Dept of Commerce, p. 104 RIMS II May 1986)	0.0000401

Impact Analysis Spreadsheet for Oakland County

A.	Total Student Activity Expenditures in County:	$73,737
B.	College Expenditures in County:	$17,528,806
C.	Total In-County Expenditures by College:	$17,602,543
D.	Disposable Income of In-County Employees Spent In County On Non-housing Items:	$11,386,161
E.	Expenditures Of Out-of-County Employees in County on Non-housing Items:	
	a. Full-Time:	$192,000
	b. Part-Time:	$173,000
F.	Rental Expenditures by Full-time College Staff Living in County:	$1,005,404
G.	Total Employee Expenditures:	$12,756,565
H.	Total Expenditures By Full-time Students:	$30,196,480
I.	Total Expenditures by Part-time Students:	$84,488,250
J.	Total Expenditures by Students:	$114,684,730
K.	Total Direct Economic Impact of the College on the County:	$145,043,838
L.	Multiplier Effect:	2.00
M.	Total Estimated Economic Impact:	$290,087,676
N.	Full-time Employees Living in County:	959
O.	Total Economic Impact of the College in the County:	$145,043,838
P.	Jobs Related to College:	5,816
Q.	Total Full-time Employment Related to College:	6,775
R.	Ratio of Sponsor Contribution to Total Economic Impact	$1.00 to $12.45

Impact Analysis Spreadsheet on Michigan

A.	Total Student Activity Expenditures in State:	$103,392
B.	College Expenditures in State:	$24,578,434
C.	Total In-State Expenditures by College:	$24,681,826
D.	Employee Non-housing Expenditures:	$15,149,886
E.	Expenditures Of Out-of-State Employees in State on Non-housing Items:	
	a. Full-Time:	$3,000
	b. Part-Time:	$1,000
F.	Rental Expenditures by Full-time College Staff Living in County:	$1,311,891
G.	Total Employee Expenditures:	$16,465,777
H.	Total Expenditures By Full-time Students:	$114,684,730
I.	Total Direct Economic Impact of the College on the State:	$155,832,333
J.	Multiplier Effect:	2.25
K.	Total Estimated Economic Impact:	$350,622,749
L.	FTE Living in State:	1,276
M.	Jobs Related to College:	6,249
N.	Total Full-time Employment Related to College:	7,525

APPENDIX C

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BIBLIOGRAPHY

Anselin, Luc. Final report on Economic Impacts of the University of California, Santa Barbara Development Scenarios.

Caffrey, John and Isaacs, Herbert. Estimating the Impact of a College or University on the Local Economy. 1971

Community Update, Henry Ford Community College and its Economic Impact on Dearborn. November 1990.

Regional Multipliers: A User Handbook for the Regional Input-Output Modeling system (RIMS II). U.S. Department of Commerce, Bureau of Economic Analysis. May 1992

Ryan, G. Jeremiah. The Direct Economic Impact of New Jersey's Community Colleges, 1983.

Seybert, Jeff. The Economic Impact of Johnson County Community College on the Kansas City Metropolitan Area. 1989

1991 Survey of Buying Power, Sales and Marketing Management, August 1991, Vol 143 #10

Winter, Gene M.& Fadale Laverna M. The Economic Impact of the SUNY Community Colleges on the State of New York. 1988

REFERENCES

Barnes, John. NBD Bank, Vice-President, Banking and Business Analysis. Telephone conversation.

Fulton, George and Grimes, Donald. Institute of Labor and Industrial Relations, University of Michigan. Telephone conversation.

Jacobs, James. Director of Policy Research, Macomb Community College. Telephone conversation.

King, Margo E. Director University Relations, Oakland University. Telephone conversation.

Miller, Randall R. Vice President for College Relations and Assistant to the President, Henry Ford Community College. Telephone conversation.

Oakland County Economic Development Office. Telephone conversations with Marlys Vickers and Kate Carden.

Rogers, Jim. SEMCOG Information Center. Telephone conversation.

Sowerby, David. Comerica Bank, Vice-President and Economist Telephone conversation.

U.S. Department of Commerce. Telephone conversation.